

FIG. 2-1**HT001****wt ORF (SEQ ID NO: 1)**

MQRPNNAHRISQPIRQIIYGLLLNASPHLDKTSWNALPPQPLAFSEVERINKNIRTSIIDAVELAKDHSLSRLTELSLRRRQMLLLETALKV
KQTILEPIPTSLKLPPIAVSCYWLQHTETKAKLHHLQSLLLTMLVGPLIAIINSPGKEELQEDGAKMLYAEFQRVKAQTRLGTRLDLDTAHI
FCQWQSQCLQMGMYNLQLLSTPLPEPDLTRLYSGSLVHGLCQQLLASTSVESLLSICPEAKQLYEYLFNATRSYAPAEIFLPKGRSNSK
KKRQKKQNTSCSKNRGRRTTAHTKCWYEGNNRFGLLMVENLEEHSSEASNIE

(-1) ORF (SEQ ID NO: 2)

MQRPNNAHRISQPIRQIIYGLLLNASPHLDKTSWNALPPQPLAFSEVERINKNIRTSIIDAVELAKDHSLSRLTELSLRRRQMLLLETALKV
KQTILEPIPTSLKLPPIAVSCYWLQHTETKAKLHHLQSLLLTMLVGPLIAIINSPGKEELQEDGAKMLYAEFQRVKAQTRLGTRLDLDTAHI
FCQWQSQCLQMGMYNLQLLSTPLPEPDLTRLYSGSLVHGLCQQLLASTSVESLLSICPEAKQLYEYLFNATRSYAPAEIFLPKGRSNSK
KKGRRNRIPAVLRTEGEPLHTPSVGMRETTGLGC

(+1)/(-2) ORF (SEQ ID NO: 3/118)

MQRPNNAHRISQPIRQIIYGLLLNASPHLDKTSWNALPPQPLAFSEVERINKNIRTSIIDAVELAKDHSLSRLTELSLRRRQMLLLETALKV
KQTILEPIPTSLKLPPIAVSCYWLQHTETKAKLHHLQSLLLTMLVGPLIAIINSPGKEELQEDGAKMLYAEFQRVKAQTRLGTRLDLDTAHI
FCQWQSQCLQMGMYNLQLLSTPLPEPDLTRLYSGSLVHGLCQQLLASTSVESLLSICPEAKQLYEYLFNATRSYAPAEIFLPKGRSNSK
KK(K)AEETEYQLF

U79260**wt ORF (SEQ ID NO: 4)**

MGHPRAIQPSVFFSPYDVHFLLYPIRCPYLKIGRFHIKLGKHLFLFSFLFFFETQSHSVTRLECSGTISAHCNLCPLGSSNSPASASRV
AGTAGTCRRRAQLIFVFLAEMGFHHVGRDGLDLNLVIHPPRSPKALGLQA

(-1) ORF (SEQ ID NO: 5)

MGHPRAIQPSVFFSPYDVHFLLYPIRCPYLKIGRFHIKLGKHLFLFSFLFFF(LRHSLTLSPGWSAVARSRLTATSASQVQVILLPQPPEW
LGLQARAAAPS

(+1)/(-2) ORF (SEQ ID NO: 6)

MGHPRAIQPSVFFSPYDVHFLLYPIRCPYLKIGRFHIKLGKHLFLFSFLFFF(F)

PTHL3**(wt) ORF (SEQ ID NO: 7)**

MQRRLVQQWSVAVFLLSYAVPSCGRSVEGLSRRLKRAVSEHQLLHDKGKSIQDLRRRFFLHHLIAEIHAEIRATSEVSPNSKPSNT
KNHPVRFGSDDEGRYLTQETNKVETYKEQPLKTPGKKKKGKPGKRKEQEKKRRRTRSAWLDSGVTGSGLEGDHLSDTSTTSLELD
SRTALLWGLKKKKKKNRTHHMLMISLFKSPLLLL

(-1) ORF (SEQ ID NO: 8)

MQRRLVQQWSVAVFLLSYAVPSCGRSVEGLSRRLKRAVSEHQLLHDKGKSIQDLRRRFFLHHLIAEIHAEIRATSEVSPNSKPSNT
KNHPVRFGSDDEGRYLTQETNKVETYKEQPLKTPGKKKKGKPGKRKEQEKKRRRTRSAWLDSGVTGSGLEGDHLSDTSTTSLELD
SRTALLWGLKKK(RK)TTEHHICN

(+1)/(-2) ORF (SEQ ID NO: 9)

MQRRLVQQWSVAVFLLSYAVPSCGRSVEGLSRRLKRAVSEHQLLHDKGKSIQDLRRRFFLHHLIAEIHAEIRATSEVSPNSKPSNT
KNHPVRFGSDDEGRYLTQETNKVETYKEQPLKTPGKKKKGKPGKRKEQEKKRRRTRSAWLDSGVTGSGLEGDHLSDTSTTSLELD
SRTALLWGLKKK(K)GKQKNTSYATNDLI

TGFbRII**(wt) (SEQ ID NO: 10)**

MGRGLLRGLWPLHIVLWTRIASTIPPHVQKSVNNDMIVTDNNGAVKFPQLCKFCDFVRFSTCDNQKSCMSNCSITSICEKPQEVCAV
WRKNDENITLETVCHDPKLPYHDFILEDAAAPKCMKEKKKGETFFMCSCSSDECNDNIIFSEEYNTSNPDLLLVIFQVTGISLLPPLG
VAISVHIFCYRYVNRQQLSSTWETGKTRKLMFSEHCAILEDSDISSTCANNINHNTELLPIELDTLVGKGRFAEVYKAKLKQNTS
EQFETVAVKIFPYEEYASWKTEKDIFSDINLKHENILOFLTAEERKTELKQYWLITAFHAKGNLQEYLRHVISWEDLRKLGSSLARGI
AHLHSDHTPCGRPKMPIVHRDLNSSLNVLKNDLTCCLCDFGLSLRLDPTLSVDDLANSGQVGTARYMAPEVLESRMNLENAESFKQT
DVYSMALVLWEMTSRCNAVGEVKDYEPFPGSKVREHPCVESMKDNVLRDRGRPEIPSWLNLHQIQMVCELTTECWDHDPPEARLT
AQCVAERFSELEHLDRLSGRSCSEEKIPEDGSLNTTK

(-1) ORF (SEQ ID NO: 11)

MGRGLLRGLWPLHIVLWTRIASTIPPHVQKSVNNDMIVTDNNGAVKFPQLCKFCDFVRFSTCDNQKSCMSNCSITSICEKPQEVCAV
WRKNDENITLETVCHDPKLPYHDFILEDAAAPKCMKEKKSLVRLSSCVPALMSAMTTSSSQKNITPAILTCC

(+1)/(-2) ORF (SEQ ID NO: 12/119)

MGRGLLRGLWPLHIVLWTRIASTIPPHVQKSVNNDMIVTDNNGAVKFPQLCKFCDFVRFSTCDNQKSCMSNCSITSICEKPQEVCAV
WRKNDENITLETVCHDPKLPYHDFILEDAAAPKCMKEKK(K)AW

MACS**(wt) ORF (SEQ ID NO: 13)**

MGAQFSKTAAGAAAERPGEAAVASSPSKANGQENGHVKNVDASPAAAESGAKEELQANGSAPAADKEEPAAGSGAASPSS
AEKGEPAAAAAPEAGASPVEKEAPAEGEAAEPGSATAAEGEASASSTSSPKAEDGATPSPSNETPKKKKKRFSFKKSFKLSSGFS
FKKNKKEAGEGGEAEAPAAEGGKDEAAGGAAAAAAEAGAASGEQAAAPGEEAAAGGEEGAAGGDPQEAQPEAAVAPEKPPASDE
TKAAEEPSKVEEKKAEAGASAAACEAPSAAGPGAPPEQEAPAEPEAAAAASSACAAPSQEAQPECSPPEAPAEAAE

(-1) ORF (SEQ ID NO: 14)

MGAQFSKTAAGAAAERPGEAAVASSPSKANGQENGHVKNVDASPAAAESGAKEELQANGSAPAADKEEPAAGSGAASPSS
AEKGEPAAAAAPEAGASPVEKEAPAEGEAAEPGSATAAEGEASASSTSSPKAEDGATPSPSNETPKKK(RSAFFPSRSLSS

(+1)/(-2) ORF (SEQ ID NO: 15)

FIG. 2-2

MGAQFSKTAAGKGEAAERPGEAAVASSPSKANGQENGHVKNVNGDASPAEAESGAKEELQANGSAPAADKEEPAAAGSGAASPS
AEKGEPAAAAPEAGASPVEKEAPEGEAAEPGSATAAEGEAASASSTSSPKAEDGATPSPSNETPKKK(K)EALFLQEVFQAERL
LLQEEQEGGWRRR

TCF-4

(wt)ORF (SEQ ID NO: 16)

MPQLNGGGDDLGADELISFKDEGEQEEKSSENSAERDLADVKSLLVNESETNQNSSDSEAERRPPRSESFRDKSRESLEEA
AKRQDGGFLFKGPPYPGYPFIMIPDLTSPYLPNGSLSPARTYLQMKWPLLDVQAGSLQSRQALKDARSPSPAHIVSNKVPVQHPHH
VHPLTPLITYSNEHFTPGNPPPHLPADVDPKTGIPRPPHPPDISPYPLSPGTGQIPHPLGWLVPQQGQPVYPITGGFRHPYPTALT
VNASVSRFPPHMPVPHHTLHTTGIPHPAIVTPTVKQESSQSDVGSLSHSSKHQDSKKEEEKKKPHIKPLNAFMYMKEMRAKVVAEC
TLKESAAINQILGRRWHALSREEQAKYYELARKERQLHMQLYPGWSARDNYGKKKKRKRDKQPGETNEHSECFLNPCLSLPPITDLS
APKKCRARFGLDQQNNWCGPCRRKKKCVRYIQGEGSCLSPSSDGLSDSPPPSPNLLGSPPRDAKSQTEQTQPLSLSLKPDPLAH
LSMMPPPPALLAEATHKASALCPNGALDLPAAALQPAAPSSSIAQPSTSWLHSHSSLAGTQPQLSLSLVTKSLE

(-1)ORF (SEQ ID NO: 17)

MPQLNGGGDDLGADELISFKDEGEQEEKSSENSAERDLADVKSLLVNESETNQNSSDSEAERRPPRSESFRDKSRESLEEA
AKRQDGGFLFKGPPYPGYPFIMIPDLTSPYLPNGSLSPARTYLQMKWPLLDVQAGSLQSRQALKDARSPSPAHIVSNKVPVQHPHH
VHPLTPLITYSNEHFTPGNPPPHLPADVDPKTGIPRPPHPPDISPYPLSPGTGQIPHPLGWLVPQQGQPVYPITGGFRHPYPTALT
VNASVSRFPPHMPVPHHTLHTTGIPHPAIVTPTVKQESSQSDVGSLSHSSKHQDSKKEEEKKKPHIKPLNAFMYMKEMRAKVVAEC
TLKESAAINQILGRRWHALSREEQAKYYELARKERQLHMQLYPGWSARDNYGKKKKRKRDKQPGETNEHSECFLNPCLSLPPITDLS
APKKCRARFGLDQQNNWCGPCRRKKKSAFATYKVKAAASAHPLQMEAY

(+1)/(-2)ORF (SEQ ID NO: 18)

MPQLNGGGDDLGADELISFKDEGEQEEKSSENSAERDLADVKSLLVNESETNQNSSDSEAERRPPRSESFRDKSRESLEEA
AKRQDGGFLFKGPPYPGYPFIMIPDLTSPYLPNGSLSPARTYLQMKWPLLDVQAGSLQSRQALKDARSPSPAHIVSNKVPVQHPHH
VHPLTPLITYSNEHFTPGNPPPHLPADVDPKTGIPRPPHPPDISPYPLSPGTGQIPHPLGWLVPQQGQPVYPITGGFRHPYPTALT
VNASVSRFPPHMPVPHHTLHTTGIPHPAIVTPTVKQESSQSDVGSLSHSSKHQDSKKEEEKKKPHIKPLNAFMYMKEMRAKVVAEC
TLKESAAINQILGRRWHALSREEQAKYYELARKERQLHMQLYPGWSARDNYGKKKKRKRDKQPGETNEHSECFLNPCLSLPPITDLS
APKKCRARFGLDQQNNWCGPCRRKK(K)VRSLHTR

TAF1b

(wt)ORF (SEQ ID NO: 19)

IPAFAGTVLQPFPEAALATRVTPAVEAPAAPRLDLEESSEEFKERCTQCAAVSWGLTDEGKYCTSCHNVTERYQEVNTNDLIPNT
QIKALNRGLKKNNTEKGWDWYVCEGFQYILYQQAELKNLGVGPGLKNDVLHNFWKRYLQKSKQAYCKNPVYTTGRKPTVLEDNL
SHSDWASEPELLSDVSCPPFLESGAESQSDIHRKFPFVSKASQSETSVCSGLDGVESQORKEKGIVKMTMPQTAFCYLSLLWQ
REAITLSDLLRFVEEDHIPYINAFQHFPEQMPLYGRDRGIFGIESWPDYEDYKKTIEVGTFLDLPRFPDITEDCYLHPNLCMKYLMV
LPDEMHSLTCHVVKMTGMEVDFTFDPIAKMAKAVKYDVQAVAIIVVLLKLLFLMDDSFWSLSNLAEKHNEKNKKDKPWFDFRKY
YQIMKKAFFDEKKQKWEEARAKYLWKSEKPLYSFVDKPVAYKKREMVNLQKQFSTLVDSTATAGKSPSSQFNWTEEDTDRTC
FHGHSLOGLVLEKQGSLTLKNSLYWLSTQKFCRW

(-1)ORF (SEQ ID NO: 20)

IPAFAGTVLQPFPEAALATRVTPAVEAPAAPRLDLEESSEEFKERCTQCAAVSWGLTDEGKYCTSCHNVTERYQEVNTNDLIPNT
QIKALNRGLKKKTLKKAGIGMCVKVSSIFFINKQKP

(+1)/(-2)ORF (SEQ ID NO: 21/120)

IPAFAGTVLQPFPEAALATRVTPAVEAPAAPRLDLEESSEEFKERCTQCAAVSWGLTDEGKYCTSCHNVTERYQEVNTNDLIPNT
QIKALNRGLKKK(K)QY

AC-1

(wt)ORF (SEQ ID NO: 22)

MDTQKQIHKTHNSKNQFFTIFFLSVEFGKEGTRKNFYLLLSIGHYGRKSRRADLTADTADKTEPECFAASWTFDPNPSVTVSGAHS
TAVHQ

(-1)ORF (SEQ ID NO: 23)

MDTQKQIHKTHNSKNQFFTIFFSCQLNLGRKEHAKITFFFQLDMDGNPGETLELQTLQIKQSQNALLPAGPLTQTPV

(+1)/(-2)ORF (SEQ ID NO: 24)

MDTQKQIHKTHNSKNQFFTIFF(F)PVS

Sec63

(wt)ORF (SEQ ID NO: 25)

MAGQQFYDDSGNTFFYFLTSFVGLIVPATYYLWPRDQNAEQIRLKNIRKVYGRCMWYRLRLKPKQPNIIPTVKIVLLAGWALFLFL
AYKVSKTREYQEYNPYEVLNLDPGATVAEIKKQYRLLSLKYHPDKGGDEVFMFRIAKAYAALTDEESRKNWEEFGNPDGPQATSF
GIALPAWIVDQKNSILVLLVYGLAFMVLPPVVGSWWYRSIRYSGDQILRTTQIYTYFYVYKTRNMDMKRLIMVLGASEFDPQYNKDAT
SRPTDNILPQLIREIGSINLKKNEPPLTCPYSLKARVLLSLHARMKIPETLEEDQQFMLKKCPALLQEMVNVICQLIVMARNREEREFR
APTLASLENCMKLSQMAVQGLQQFKSPLLQLPHIEEDNLRVSNHKKYKIKTIQDLVSLKESDRHTLLHFLEDEKYEYEMAVLGSFPY
VTMDIKSQVLDDDESDNNITVGSVLTVLVKLTRQTMAEVEFEQESICAAEEQPAEDGQGETNKNRTKGGWQKQSKGPKKTAKSKKKK
PLKKKPTPVLPPQSKQKQKQANGVVGNEAAVKEDEEEVSDKGSDEEEETNRDSQSEKDDGSDRDSREQDEKQNKDDEAEW
QELQQSIQRKERALLETSKITHPVYSLYFPEEKQEWWWLYIADRKEQTLISMPYHVCTLKDTEEVELKFPAPGKPGNYQYTVFLRS
SYMGLDQIKPLKLEVEAKPVPENHPQWDTAIEGDEDQEDSEGFEDSFEEDDEEDDD

(-1) 9er A-Repeat (SEQ ID NO: 26)

MAGQQFYDDSGNTFFYFLTSFVGLIVPATYYLWPRDQNAEQIRLKNIRKVYGRCMWYRLRLKPKQPNIIPTVKIVLLAGWALFLFL
AYKVSKTREYQEYNPYEVLNLDPGATVAEIKKQYRLLSLKYHPDKGGDEVFMFRIAKAYAALTDEESRKNWEEFGNPDGPQATSF
GIALPAWIVDQKNSILVLLVYGLAFMVLPPVVGSWWYRSIRYSGDQILRTTQIYTYFYVYKTRNMDMKRLIMVLGASEFDPQYNKDAT
SRPTDNILPQLIREIGSINLKKNEPPLTCPYSLKARVLLSLHARMKIPETLEEDQQFMLKKCPALLQEMVNVICQLIVMARNREEREFR
APTLASLENCMKLSQMAVQGLQQFKSPLLQLPHIEEDNLRVSNHKKYKIKTIQDLVSLKESDRHTLLHFLEDEKYEYEMAVLGSFPY
VTMDIKSQVLDDDESDNNITVGSVLTVLVKLTRQTMAEVEFEQESICAAEEQPAEDGQGETNKNRTKGGWQKQSKGPKKTAKSKKKR

FIG. 2-3

(+1)/(-2) 9er A-Repeat (SEQ ID NO: 27)

MAGQQFQYDDSGNTFFYFLTSFVGLVIVPATYYLWPRDQNAEQIRLKNIRKVYGRCMWYRLRLLPQPNIIPTVKKIVLLAGWALFLFL
 AYKVSCTDREYQEYNPYEVLNLDPGATVAEIKKQYRLLSLKYHPDKGGDEVFMFRIAKAYAALDEESRKNWEEFGNPDGPQATSF
 GIALPAWIVDQKNSILVLLVYGLAFMVLVPGVSWWYRSIRYSGDQILIRTTQIYTYFVYKTRNMDMKRLIMVLGASEFDPQYNKDAT
 SRPTDNILIPQLIREIGSINLKKNEPPLTCPYSLKARVLLSHLARMKIPETLEEDQQFMLKKCPALLQEMVNVICQLIVMARNREEREFR
 APTLASLNCMKLSQMAVQGLQQFKSPLLQLPHIEEDNLRVSNHKKYKIKTIQDLVSLKESDRHTLLHFEDEKYEEMAVLGSFPY
 VTMDIKSQVLDDSDSNITVGSVLTVLVKLTRQTMAEVFEKEQSICAAEEQPAEDGQGETNKNRTKGGWQQ
 KSKGPKKTAKSKK(K)ETFKKKTYTCAITTVKATETKAGKWSRWE

(-1) 10er A-Repeat (SEQ ID NO: 28)

MAGQQFQYDDSGNTFFYFLTSFVGLVIVPATYYLWPRDQNAEQIRLKNIRKVYGRCMWYRLRLLPQPNIIPTVKKIVLLAGWALFLFL
 AYKVSCTDREYQEYNPYEVLNLDPGATVAEIKKQYRLLSLKYHPDKGGDEVFMFRIAKAYAALDEESRKNWEEFGNPDGPQATSF
 GIALPAWIVDQKNSILVLLVYGLAFMVLVPGVSWWYRSIRYSGDQILIRTTQIYTYFVYKTRNMDMKRLIMVLGASEFDPQYNKDAT
 SRPTDNILIPQLIREIGSINLKKNEPPLTCPYSLKARVLLSHLARMKIPETLEEDQQFMLKKCPALLQEMVNVICQLIVMARNREEREFR
 APTLASLNCMKLSQMAVQGLQQFKSPLLQLPHIEEDNLRVSNHKKYKIKTIQDLVSLKESDRHTLLHFEDEKYEEMAVLGSFPY
 VTMDIKSQVLDDSDSNITVGSVLTVLVKLTRQTMAEVFEKEQSICAAEEQPAEDGQGETNKNRTKGGWQQ
 KSKGPKKTAKSKKKPLK(K)NLHLCYYHSQSNRNKSQMESLGMKLQ

(+1)/(-2) 10er A-Repeat (SEQ ID NO: 29)

MAGQQFQYDDSGNTFFYFLTSFVGLVIVPATYYLWPRDQNAEQIRLKNIRKVYGRCMWYRLRLLPQPNIIPTVKKIVLLAGWALFLFL
 AYKVSCTDREYQEYNPYEVLNLDPGATVAEIKKQYRLLSLKYHPDKGGDEVFMFRIAKAYAALDEESRKNWEEFGNPDGPQATSF
 GIALPAWIVDQKNSILVLLVYGLAFMVLVPGVSWWYRSIRYSGDQILIRTTQIYTYFVYKTRNMDMKRLIMVLGASEFDPQYNKDAT
 SRPTDNILIPQLIREIGSINLKKNEPPLTCPYSLKARVLLSHLARMKIPETLEEDQQFMLKKCPALLQEMVNVICQLIVMARNREEREFR
 APTLASLNCMKLSQMAVQGLQQFKSPLLQLPHIEEDNLRVSNHKKYKIKTIQDLVSLKESDRHTLLHFEDEKYEEMAVLGSFPY
 VTMDIKSQVLDDSDSNITVGSVLTVLVKLTRQTMAEVFEKEQSICAAEEQPAEDGQGETNKNRTKGGWQQ
 KSKGPKKTAKSKKKPLK(K)TYTCAITTVKATETKAGKWSRWE

Caspase 5**(wt)ORF (SEQ ID NO: 30)**

MFKGILQSGLDNFVINHMLKNNVAGQTSIQTLVPNTDQKSTSVKKDNHKKKTKVMLEYLGKDVHGVFNLYAKHDVLTKEEEKKKYY
 DAKIEDKALILVDSLKNRVAHQMFQTLLNMDQKITSVKPLQIEAGPPESAESTNKLCPREEFLRLCKKNHDEIYPIKKREDRRRLA
 LIICNTKFDHLPARNGAHYDVGMRLLQGLGYTVVDEKNLTARDMESVLRFAFAARPEHKSSDSTFLVMSHGILEGICGTAHKKKKP
 VLLYDTIFQIFNNRNLCLSLDKPKVIIVQACRGEKHGELWVRDSPASLAVISSQSENLEADSVCKIHEEKDFIAFCSSSTPHNVSWRDR
 TRGSIFITELITCFQKYSCCCHLMEIFRKVQKSFEVPAQAQMPTIERATLTRDFYLFPGN

(-1)ORF (SEQ ID NO: 31)

MFKGILQSGLDNFVINHMLKNNVAGQTSIQTLVPNTDQKSTSVKKDNHKKKQLRCWNTWAKMFFMVFLIHWQNTME

(+1)/(-2)ORF (SEQ ID NO: 32)

MFKGILQSGLDNFVINHMLKNNVAGQTSIQTLVPNTDQKSTSVKKDNHKK(K)NS

AIM2**(wt)ORF (SEQ ID NO: 33)**

MESKYKEILLTGLDNITDEELDRFKFFLSDEFNIATGKLHTANRIQVATLMIQNAGAVSAVMKTIRIFQKLNMYLLAKRLQEEKEKVDKQ
 YKSVTKPKPLSQAEMSPAASAAIRNDVAKQRAAPKVSPHVKEQKQMVAAQESIREGFQKRCLPVMVLKAKKPFTFETQEGKQEMF
 HATVATEKEFFVVKVFNTLLKDKFIPKRIIIARYYRHSGFLEVNSASRVLDAESDQKVNPLNIIRKAGETPKINTLQTQPLGTIVNGLFV
 VQKVTEKKKILFDLSDNTGKMEVLGVRNEDTMCKEKGDKVRLTFFTLKNGEKLQLTSGVHSTIKVIKAKKK

(-1)ORF (SEQ ID NO: 34)

MESKYKEILLTGLDNITDEELDRFKFFLSDEFNIATGKLHTANRIQVATLMIQNAGAVSAVMKTIRIFQKLNMYLLAKRLQEEKEKVDKQ
 YKSVTKPKPLSQAEMSPAASAAIRNDVAKQRAAPKVSPHVKEQKQMVAAQESIREGFQKRCLPVMVLKAKKPFTFETQEGKQEMF
 HATVATEKEFFVVKVFNTLLKDKFIPKRIIIARYYRHSGFLEVNSASRVLDAESDQKVNPLNIIRKAGETPKINTLQTQPLGTIVNGLFV
 VQKVTEKKKILFDLSDNTGKMEVLGVRNEDTMCKEKGDKVRLTFFTLKNGEKLQLTSGVHSTIKVIKAKKKHREVKRTNSSQLV

(+1)/(-2)ORF (SEQ ID NO: 35)

MESKYKEILLTGLDNITDEELDRFKFFLSDEFNIATGKLHTANRIQVATLMIQNAGAVSAVMKTIRIFQKLNMYLLAKRLQEEKEKVDKQ
 YKSVTKPKPLSQAEMSPAASAAIRNDVAKQRAAPKVSPHVKEQKQMVAAQESIREGFQKRCLPVMVLKAKKPFTFETQEGKQEMF
 HATVATEKEFFVVKVFNTLLKDKFIPKRIIIARYYRHSGFLEVNSASRVLDAESDQKVNPLNIIRKAGETPKINTLQTQPLGTIVNGLFV
 VQKVTEKKKILFDLSDNTGKMEVLGVRNEDTMCKEKGDKVRLTFFTLKNGEKLQLTSGVHSTIKVIKAKKK(K)NIEK

SLC23A1**(wt)ORF (SEQ ID NO: 36)**

MMGIGKNTTSKSMAGSSTEGKYEDEAKHPAFFTLPPVINGGATSSGEQDNEDTELMAYTTENGIAEKSSLAETLDSTGSLDPQRS
 DMIYTIEDVPPWYLICIFLGLQHYLTCFSGTIAVPFLADAMCVGYDQWATSQLIGTIFFCVGITLLQTTFGCRPLPFQTSASAFLAPARA
 ILSLDKWKCNNTDVSANGTAELLHTEHIWYPRIREIQGAIIMSSLIEVVIGLLGLPGALLKYIGPLTITPTVALIGLSGFQAAGERAGKHW
 GIAMLTIFLVLLFSQYARNVKFPLPIYKSKKGWTAYKLQFLKMFPIILAILVSWLLCFIFTVDVFPDPSTKYGFYARTDARQGVLLVAPW
 FKVPYFQWGLPTVSAAGVIGMLS AVVASIIESIGDYACARLSCAPPPPIHAINRGIFVEGLSCVLDGIFGTNGSTSSPNIGVLGITK
 VGSRRVIQCGAALMLALGMIGKFSALFASLPDPVLGALFCTLFGMTAVGLSNLQFIDLNSSRLNVLGFSIFFGLVLPYLRQNPLVTGI
 TGIDQVLNVLLTAMFVGCVAFILDNTIPGTPEERGIRKWKKGVGKGNKSLDGMESYNLPFGMNIKKYRCFSYLPISPTFVGTYWK
 GLRKSNSRSDESDSATG

(-1)ORF (SEQ ID NO: 37)

MMGIGKNTTSKSMAGSSTEGKYEDEAKHPAFFTLPPVINGGATSSGEQDNEDTELMAYTTENGIAEKSSLAETLDSTGSLDPQRS
 DMIYTIEDVPPWYLICIFLGLQHYLTCFSGTIAVPFLADAMCVGYDQWATSQLIGTIFFCVGITLLQTTFGCRPLPFQTSASAFLAPARA
 ILSLDKWKCNNTDVSANGTAELLHTEHIWYPRIREIQGAIIMSSLIEVVIGLLGLPGALLKYIGPLTITPTVALIGLSGFQAAGERAGKHW
 GIAMLTIFLVLLFSQYARNVKFPLPIYKSKKGWTAYKLQFLKMFPIILAILVSWLLCFIFTVDVFPDPSTKYGFYARTDARQGVLLVAPW
 FKVPYFQWGLPTVSAAGVIGMLS AVVASIIESIGDYACARLSCAPPPPISTQ

(+1)/(-2)ORF (SEQ ID NO: 38)

FIG. 2-4

MMGIGKNTTSSKMEAGSSTEGKYEDEAKHPAFFTLPVVINGGATSSGEQDNEDTELMAYTTENGIAEKSSLAETLDSTGSLDPQRS
 DMIYTTIEDVPPWYLICIFLGLQHYLTFCFSGTIAVPFLADAMCVGYDQWATSQLIGTIFFCVGITLLQTTFGCRLPLFQTSFAFLAPARA
 ILSLDKWKCNNTDVSANGTAELLHTEHIWYPRIREIQGAIIMSSLIEVVIGLLGLPGALLKYIGPLTITPTVALIGLSGFQAAGERAGKHW
 GIAMLTIFLVLLFSQYARNVKFPLPIYKSKKGWTAAYKLQLFKMFPIILVSWLLCFITVTDVFPDSTKYGFYARTDARQGVLVAPW
 FKVPYPFQWGLPTVSAAGVIGMLSAAVVASIIESIGDYYACARLSCAPP

(P)HPRNKQGNFRGRPLCS

ABCF1

(wt)ORF (SEQ ID NO: 39)

MPKAPKQQPPEPEWIGDGESTSPSDKVVKKGKKDKKIKKTFFEEELAVEDKQAGEEEKVLKEKEQQQQQQQQQQQKKKRDTRKGRR
 KKDVDDDDGEEKELMERLKKLSVPTSDEEDEVPAKPRGGKKTGGNVFAALIQDQSEEEEEEEKHPPKPAKPEKNRINKAVSEEQQ
 PALKGKKGKEEKSGKGAQPNKFAALDNEEEDKEEEIIEKEPPKQGGKEKAKKAEQMEYERQVASLKAANAENDFSVQAEMSSR
 QAMLENASDIKLEKFSISAHGKELFVNADLYIVAGRRYGLVGPNGKGKTTLLKHIANRALSIPPIDVLLCEQEVVADETPAVQAVLRAD
 TKRLKLLLEEERRLQGQLEQGGDDTAERLEKVEELRATGAAAAEAKARRILAGLGFDPQMNRPTQKFSGGWVRMVSRLARALFMEP
 TLLMLDEPTNHLDLNAVIWLNLYLQGWRTLLVSHDQGLDDVCTDIIHLDAQRLHYRGNYMTFKKMYQQKQKELLKQYEQKQKLL
 KELKAGGKSTKQAEKQKEALTRKQKCRKNQDEESQEAPELLKRPKEYTVRFTFPDPPPLSPPVLGLHGVTFGYQQGKPLFKNL
 DFGIDMDSRICIVGPNVGVKSTLLLLLTGKLTPTHGEMRKNHRLKIGFFNQQAQAEQLRMEETPTTEYLQRGFNLPYQDARKCLGRFGL
 SHAHTIQICKLSGGQKARVFAELACREPDVILDEPTNNDLIESIDALGEAINEYKGAIVVSHDARLITETNCQLVWVVEEQSVSQIDG
 DFEDYKREVLALGEVMSRPRE

(-1)ORF (SEQ ID NO: 40)

MPKAPKQQPPEPEWIGDGESTSPSDKVVKKGKKDKKIKKTFFEEELAVEDKQAGEEEKVLKEKEQQQQQQQQQQQKSEIPEKAGGR
RMWMMMEKRKSSWSVLRSSQCQPMRRMKYPPQNPAEGRKPRVVMFLQP

(+1)/(-2)ORF (SEQ ID NO: 41)

MPKAPKQQPPEPEWIGDGESTSPSDKVVKKGKKDKKIKKTFFEEELAVEDKQAGEEEKVLKEKEQQQQQQQQQQQK(K)ARYPKRQA
EEGCG

HSPC259

(wt)ORF (SEQ ID NO: 42)

SPDYFPQISSQFGTVEK
 MEKIFISSSTKAEGKGISPFAPINTQAPPEKGKEAVVQEPERSWFQTKEERKKEKIAKALQEFDLALRGKKKRRKFMKDAKKKGEMT
 AEERSQFEILKAQMFAERLAKRNRRAKRARAMPEEEEPVRGPAKKQKQGGKSVFDEELTNTSKKALKQYRAGPSFEERKQLGLPHQR
 RGGNFKSNPDTRGGSSCRGLKKFMGAALKSLPCGKSSWLVLCLFSICLKKKQKQKTTLWCGGMVRSYFPKHVCQSPFLLISFHMILT
 NGSIFGKRE

(-1)ORF (SEQ ID NO: 43)

MEKIFISSSTKAEGKGISPFAPINTQAPPEKGKEAVVQEPERSWFQTKEERKKEKIAKALQEFDLALRGKKKRRKFMKDAKKKGEMT
 AEERSQFEILKAQMFAERLAKRNRRAKRARAMPEEEEPVRGPAKKQKQGGKSVFDEELTNTSKKALKQYRAGPSFEERKQLGLPHQR
 RGGNFKSNPDTRGGSSCRGLKKFMGAALKSLPCGKSSWLVLCLFSICLKKNKNKKQHFGVWVWYVAIFLSMSVNLPS

(+1)/(-2)ORF (SEQ ID NO: 44)

MEKIFISSSTKAEGKGISPFAPINTQAPPEKGKEAVVQEPERSWFQTKEERKKEKIAKALQEFDLALRGKKKRRKFMKDAKKKGEMT
 AEERSQFEILKAQMFAERLAKRNRRAKRARAMPEEEEPVRGPAKKQKQGGKSVFDEELTNTSKKALKQYRAGPSFEERKQLGLPHQR
 RGGNFKSNPDTRGGSSCRGLKKFMGAALKSLPCGKSSWLVLCLFSICLKK(K)TKTKNNTLVWVWYGT

Bax

(wt)ORF (SEQ ID NO: 45)

MDGSGEQPRGGGPTSSEQIMKTGALLQGFQIDRAGRMGGEAPELALDPVPQDASTKKLSECLKRIGDELDSNMELQRMIAAVDTD
 SPREVFFRVAADMFSQGNFNVGRVVALFYFASKLVLKALCTKVPELIRTIMGWTLDFLRERLLGWIQDQGGWDGLLSYFGTPTWQT
 VTIFVAGVLTASLTWKKMG

(-1)ORF (SEQ ID NO: 46)

MDGSGEQPRGGGPTSSEQIMKTGALLQGFQIDRAGRMGGRHPSWPWTRCLMRPPRS

(+1)/(-2)ORF (SEQ ID NO: 47)

MDGSGEQPRGGGPTSSEQIMKTGALLQGFQIDRAGRMGG(G)GTRAGPGPGASGCVHQEAERVSQAHRGRTGQ

TCF6L1

(wt)ORF (SEQ ID NO: 48)

MAFLRSMWGVLSALGRSGAELCTGCGSRLRSPFSFVYLPRWFSSVLASCPKPKPVSSYLRFSSKEQLPIFKAQNPDAKTTELIRRIAQR
 WRELPSKKKIYQDAYRAEWQVYKEEISRFKEQLTPSQIMSLEKEIMDKHLKRKAMTKKKELTLLGKPKRPRSAYNVYVAERFQEAQ
 GDSPQEKLTVKENWKNLSDSEKELYQHAKEDETRYHNEMKSWEEQMIIEVGRKDLLRRTIKKQRKYGAEEC

(-1)ORF (SEQ ID NO: 49)

MAFLRSMWGVLSALGRSGAELCTGCGSRLRSPFSFVYLPRWFSSVLASCPKPKPVSSYLRFSSKEQLPIFKAQNPDAKTTELIRRIAQR
 WRELPSKKKIYQDAYRAEWQVYKEEISRFKEQLTPSQIMSLEKEIMDKHLKRKAMTKKKS

(+1)/(-2)ORF (SEQ ID NO: 50)

MAFLRSMWGVLSALGRSGAELCTGCGSRLRSPFSFVYLPRWFSSVLASCPKPKPVSSYLRFSSKEQLPIFKAQNPDAKTTELIRRIAQR
 WRELPSKKKIYQDAYRAEWQVYKEEISRFKEQLTPSQIMSLEKEIMDKHLKRKAMTKK(K)RVNTAWKTKTSFSL

FTL3L

(wt)ORF (SEQ ID NO: 51)

MTVLAPAWSPPTTYLLLLLLSSGLSGTQDCSFQHSPISSDFAVKIRELSDYLLQDYPVTVASNLQDEELCGGLWRLVLAQRWMERLKT
 VAGSKMQGLLERVNTIEHFVTKCAFQPPPSCLRFVQTNISRLQETSEQLVALKPWITRQNFSCRLELCQCPDSSTLPPPWSPRPLE
 ATAPTAPQPLLLLLLPVGLLLAAWCLHWQRTTRRTPRPGEQVPPVPSQDLLLLVEH

(-1)ORF (SEQ ID NO: 52)

MTVLAPAWSPPTTYLLLLLLSSGLSGTQDCSFQHSPISSDFAVKIRELSDYLLQDYPVTVASNLQDEELCGGLWRLVLAQRWMERLKT
 VAGSKMQGLLERVNTIEHFVTKCAFQ
 PPPAVFASSRPTSPASCRRPPSSWWR

FIG. 2-5

(+1)/(-2)ORF (SEQ ID NO: 53)

MTVLAPAWSPTTYLLLLLLSSGLSGTQDCSFQHSPISSDFAVKIRELSDYLLQDYPVTVASNLQDEELCGGLWRLVLAQRWMERLKT
 VAGSKMQGLLERVNTIEHFVTKCAFQ
 PP(P)QLSSLRPDQHLPPPAGDLRAAGGAEALDHSPELLPVPGAASAR

OGT**(wt)ORF (SEQ ID NO: 54)**

MLQGHFWLVREGIMISPSSPPPNLFFFPLQIFPFPFTSFPSHLLSLTPPKACYLKAJETQPNFAVAWSNLGCVFNAQGEIWLAIHFE
 KAVTLDPNFLDAYINLGNVLKEARIFDRAVAAYLRALSLSPNHAVVHGNLACVYEEQGLIDLAIDTYRRAIELQPHFPDAYCNLANALKE
 KGSVAEEDCYNTALRLCPHADSLNNLANIKREQGNIEEAVRLYRKALEVFPEFAAAHSNLASVLQQQKGLQEALMHYKEAIRISPTF
 ADAYSNMGNLTLEMQDVQGALQCYTRAIQINPAFADAHSNLASIHKDSGNIPEAIASYRTALKLKPDPDAYCNLAHCLQIVCDWTDY
 DERMKKLVSIADQLEKNRLPSVHPHSMMLYPLSHGFRKAIAERHGNLCLDKINVLHKPPYEHKDKLSDGRLRVGVYSSDFGNHPT
 SHLMQSPGIMHNPDKFEVFCYALSPDDGTNFRVKVMAEANHFIDLSQIPCNKGKAADRIHQDGIHILVNMNGYTKGARNELFALRPAPI
 QAMWLGYPGTSGALFMDYIITDQETSPAEEVAEQYSEKLAYMPHTFFIGDHANMFPHLKKKAVIDFKSNGHIYDNRIVLNGIDLKAFIDS
 LPDVKIVKMKCPDGGDNADSSNTALNMPVIMNTIAEAVIEMINRGQIQITINGFSISNGLATTQINNKAATGEEVPRTIIVTTRSQYGLP
 EDAIVYCNFNQYKIDPSTLQMWANILKRVPNVSLVLLRFPVAVGEPNIQQYAAQNMGLPQNRIFSPVAPKEEHVRRGQLADVCLDTPL
 CNGHTTGMDVLWAGTPMVTMPGETLASRVAASQLTCLGCELIAKNRQEYEDIAVKLGTDLLEYLKKVRGKVVWQRISSPLFNTKQYT
 MELERLYLQMWVEHYAAGNKPDMIKPVEVTESA

(-1)ORF (SEQ ID NO: 55)

MLQGHFWLVREGIMISPSSPPPNLFFSLYKFSFPFLPPFPPIFFH

(+1)/(-2)ORF (SEQ ID NO: 56)

MLQGHFWLVREGIMISPSSPPPNLFF(F)PFTNFPLSLYLLSLPSSFINPS

ELAVL3**(wt)ORF (SEQ ID NO: 57)**

MESQVGGGPAGRPAQRPLLGTNGATDDSKTNLIVNYPQNMTQDEFKSLFGSIGDIESCKLVRDKITGQSLGYGFVNYSDPNADKA
 INTLNLGLKQTKTIKVSARPSASIRDANLYVSGLPKTMQKEMEQLFSQYGRITSRILVDQVTGVSRGVGFIRFDKRIEAEAAIKGLN
 GQKPLGAREPITVKFANNPSQKTGQALLTHLYQSSARRYAGPLHHQTQRFRLDNLNMAYAVKRFSPAIADGMSGLAGVGLSGGAAG
 GWCIFVYNLSPEPDQSVLWQLFGPFGAVTNVKVIRDFTTNKCKGFGFMTMTNYDEAAMAIASLNGYRLGQRLVQVSFKTSKQHKHA

(-1)ORF (SEQ ID NO: 58)

MESQVGGGARPAGLPNGHSLVQMEPLTTARTSSSTTCPT

(+1)/(-2)ORF (SEQ ID NO: 59)

MESQVGG(G)PGRPACPTATPWYKWSH

MAC30X**(wt)ORF (SEQ ID NO: 59)**

LFSHQVRVQAQPTDYGGSFTRRCVEWLLGLYFLSHIPITLFDLQAVVPRELYPVEFRNLLKWYAKEFKDPLLQEPPAWFKSFLFCELV
 FQLPFFPIATYAFKLGSCKWIRTPAIIYSVHTMTLILILSTFLFEDFSKASGFKGQRPETLHERLTLVSVYAPYLLIPFILLIFMLRSPYYKY
 EEKRRKKK

(-1)ORF (SEQ ID NO: 61)

LFSHQVRVQAQPTDYGGSFTRRCVEWLLGLYFLSHIPITLFDLQAVVPRELYPVEFRNLLKWYAKEFKDPLLQEPPAWFKSFLFCELV
 FQLPFFPIATYAFKLGSCKWIRTPAIIYSVHTMTLILILSTFLFEDFSKASGFKGQRPETLHERLTLVSVYAPYLLIPFILLIFMLRSPYYKY
 EEKRRKKKNEGNHWPVEMPTGWLLVGYIQEHGSEPTSSAAFETLAAMHKSMMVSGTMSNPHELLPFFFF

(+1)/(-2)ORF (SEQ ID NO: 62)

LFSHQVRVQAQPTDYGGSFTRRCVEWLLGLYFLSHIPITLFDLQAVVPRELYPVEFRNLLKWYAKEFKDPLLQEPPAWFKSFLFCELV
 FQLPFFPIATYAFKLGSCKWIRTPAIIYSVHTMTLILILSTFLFEDFSKASGFKGQRPETLHERLTLVSVYAPYLLIPFILLIFMLRSPYYKY
 EEKRRKK(K)MKETTIGPG

SLC4A3**(wt)ORF (SEQ ID NO: 63)**

MANGVIPPPGGASPLPQVRVPLEEPPLSPDVEEEDDDLGKTLAVSRFGDLISKPPAWDPEKPSRSYSERDFEFHRHTSHHHTHPLSA
 RLPPPHKLRLRPPTSARHTRRKRRKKEKTSAPPSEGTPIQEEGGAGVDEEEEEEEEEGESEAEPEVPPPSGTPQKAKFSIGSDEDD
 SPGLPGRAAVTKPLPSVGPHTDKSPQHSSSSPSPRARASRLAGEKSRPWSPSASYDLRERLCPGSALGNPGGPEQQVPTDEAEAQ
 MLGSADLDDMKSHRLEDNPGVRRHLVKKPSRTQGGGRGSPGLAPILRRKKKKKKLDRRPHEVFVELNELMLDRSQEPHWRETARW
 IKFEEDVEEETERWGKPHVASLSFRSLELRLRTIAHGAALLDLEQTTLPGLAHLVETMIVSDQIRPEDRASVLRLLLLKHSHPNDDKDS
 GFFPRNPSSSSMNSVLGNHPTPSHGPDPGAVPTMADDLGEPAWPHDPDAKEKPLHMPGGDGHGKSLKLEKIPEDAEATVVL
 VGCVPFLEQPAAAFVRLNEAVLLESVLEVPVVRFLVMLGPSHTSTDYHELGRSIATLMSDKLFHEAAYQADDRQDLSAISEFLDG
 SIPIPPSEVEGRDLLRSVAAFQRELLRKRREREQTKVEMTTTRGGYTAPGKELSLGSGSEATPEDDPLLRRTGSVFGGLVRDVRRRYP
 HYPSDLRLDALHSQCVAALVFIYAALSPAITFGGLLGEKTEGLMGVSELIVSTAVLGVLFSLGAQPLLVGFSGPLLVFEEAFFKFCRA
 QDLEYLTGRVWVGLWLVFVLALVAEAGSFLVRYISPFTQEIFAFLISLIFIYETFYKLYKVFTTEHPLLPFPYPEGAGLEGLAAGLEPNGS
 ALPPTEGPPSPRNQPNNTALLSLILMLGTFFIAFFLRKFRNSRFLGGKARRIIGDFGIPISILVMVLVDYSITDTYTQKLTVPGLSVTSPDK
 RSWFIPPLGSARPPPPWMMVAAPVALLVILIFMETQITLIVSQKARRLLKSGSGFHLDLLIGSLGGGLGFLPWLTAATVRSVTHV
 NALTVMRTAIAPGDKPIQEVREQRVTGVLIASLVGLSIVMGAVLRRILAVLFGIFLYMGVTSLSGIQLSQRLLILMPAKHHPEQPYVT
 KVKTWRMHLFTCIQLGCIALLWVVKSTAASLAFPLLLLLTVPLRHCLLPRLFQDRELQALDSEDAEPNDFEDGQDEYNELHMPV

(-1)ORF (SEQ ID NO: 64)

MANGVIPPPGGASPLPQVRVPLEEPPLSPDVEEEDDDLGKTLAVSRFGDLISKPPAWDPEKPSRSYSERDFEFHRHTSHHHTHPLSA
 RLPPPHKLRLRPPTSARHTRRKRRKKEKTSAPPSEGTPIQEEGGAGVDEEEEEEEEEGESEAEPEVPPPPQGPHRRQSSPLEVTRM
TVQASLGGLLSPSPCPRWAHTLTRAPSTPAAPPAGPGPPDSLGRKAGPGAHRPVMTCGSDCAQAVPWATQVVQSSRCQMRRR
PRCWLTQTTT

(+1)/(-2)ORF (SEQ ID NO: 65)

MANGVIPPPGGASPLPQVRVPLEEPPLSPDVEEEDDDLGKTLAVSRFGDLISKPPAWDPEKPSRSYSERDFEFHRHTSHHHTHPLSA
 RLPPPHKLRLRPPTSARHTRRKRRKKEKTSAPPSEGTPIQEEGGAGVDEEEEEEEEEGESEAEPEVPP(P)LRDPTGKVLHWK

FIG. 2-6

PRKDC**(wt)ORF (SEQ ID NO: 66)**

MAGSGAGVRCSSLRLQETLSAADRCGAALAGHQLIRGLGQECVLSSSPAVALQTSLVFSRDFGLLVFVRKSLNSIEFRECREEILKFL
CIFLEKMGQKIAPYSVEIKNTCTSVYTKDRAACKIPALDLLIKLQTFRRSSRLMDEFKIGELFSKFYGEALAKKKIPDTVLEKVVYELLGLL
GEVHPSEMINNAENLFRALGELKTQMTSAVREPKLPLVLAGCLKGLSSLLCNFTKSMEEDPQTSREIFNFVLKAIRPQIDLKRYAVPSA
GLRLFALHASQFSTCLLDNYVSLFEVLLKWCATNVELKKAALSALESFLKQVSNMVAKNAEMHKNLQYFMEQFYGIIRNVDSNNKE
LSAIRGYGLFAGPCKVINAKDVDFMYVELIQRCQKMFMTQTDTGDDRUYQMPSPFLQSVASVLLYLDTVPEVYTPVLEHLVVMQIDSFP
QYSPKMLVCCRAIVKVFALAAKGPVLRNCISTVHHQGLIRICSKPVLPKGPESSEDEHRASGEVRTGKWVPTYKYDYVDFRHL
SSDQMMDSILADEAFFSVNSSSESLNHLLYDEFVKSVLKIVEKLDLTLEIQTVEQENGDEAPGVWMIPTSDPAANLHPAKPKDFSAFI
NLVEFCREILPEKQAEFFEPWVYSFSYELILQSTRPLISGFYKLLSITVRNAKKIKYFEGS

(-1)ORF (SEQ ID NO: 67)

MAGSGAGVRCSSLRLQETLSAADRCGAALAGHQLIRGLGQECVLSSSPAVALQTSLVFSRDFGLLVFVRKSLNSIEFRECREEILKFL
CIFLEKMGQKIAPYSVEIKNTCTSVYTKDRAACKIPALDLLIKLQTFRRSSRLMDEFKIGELFSKFYGEALAKKKYQIQF

(+1)/(-2)ORF (SEQ ID NO: 68)

MAGSGAGVRCSSLRLQETLSAADRCGAALAGHQLIRGLGQECVLSSSPAVALQTSLVFSRDFGLLVFVRKSLNSIEFRECREEILKFL
CIFLEKMGQKIAPYSVEIKNTCTSVYTKDRAACKIPALDLLIKLQTFRRSSRLMDEFKIGELFSKFYGEALAKKK(K)NTYRSFRKS

UVRAG**(wt)ORF (SEQ ID NO: 69)**

MSASASVGGPVQPPPPGPAALPPGSAARALHVELPSQQRRLRHLRNLIAARNIVNRNGHQLLDITYFTLHLCSTEKIYKEFYRSEVIKN
SLNPTWRSDFGIMPDRDLTSSVCFVVKIWGGKENIYQLLIEWKVCGLDGLKYLGGQIHARNQNEIIFGLNDGYYGAPFEHKGYSNAQK
TILLQVDQNCVRNSYDVFSLLRLHRAQCAIKQTQVTQVQIGKEIEEKRLTSTSNELKKKSECLQLKILVLQNELERQKKALGREVALLH
KQQLALQDKGSFAEHLKQLQKESLNLKRECKTAKRELFLKTNAQLTIRCRLSEL.SYIYPIDLNEHKDYFVCGVKLPNSDFQAK
DDGSIAVALGYTAHLVSMISFFLQVPLRYPPIHKGSRSSTIKDNINDKLTEKEREFPYLPKGGEKLQFDYGVYLLNKNIAQLRYQHGLGTP
DLRQTLPLNLKNFMEHGLMVRCDRHHTSSAIPVPKRQSSIFGGADVGFSGGIPSPDKGHRKRASSENERLQYKTPPPSYNSALAQPVT
TVPSMGETERKITSLSSSLDTSDFSKENKKKGEDLVGSLNGGHANVHPSQEQQEALSGHRATVNGTLLPSEQAGSASVQLPGEFH
PVSEALCCTVEQAEIIGLEAQVSPQVIS

(-1)ORF (SEQ ID NO: 70)

MSASASVGGPVQPPPPGPAALPPGSAARALHVELPSQQRRLRHLRNLIAARNIVNRNGHQLLDITYFTLHLCSTEKIYKEFYRSEVIKN
SLNPTWRSDFGIMPDRDLTSSVCFVVKIWGGKENIYQLLIEWKVCGLDGLKYLGGQIHARNQNEIIFGLNDGYYGAPFEHKGYSNAQK
TILLQVDQNCVRNSYDVFSLLRLHRAQCAIKQTQVTQVQIGKEIEEKRLTSTSNELKKKVNACS

(+1)/(-2)ORF (SEQ ID NO: 71)

MSASASVGGPVQPPPPGPAALPPGSAARALHVELPSQQRRLRHLRNLIAARNIVNRNGHQLLDITYFTLHLCSTEKIYKEFYRSEVIKN
SLNPTWRSDFGIMPDRDLTSSVCFVVKIWGGKENIYQLLIEWKVCGLDGLKYLGGQIHARNQNEIIFGLNDGYYGAPFEHKGYSNAQK
TILLQVDQNCVRNSYDVFSLLRLHRAQCAIKQTQVTQVQIGKEIEEKRLTSTSNELKKK(K)

MSH3**(wt)ORF (SEQ ID NO: 72)**

MSRRKPASGGGLAASSAPARQAVLSRFFQSTGSLKSTSSSTGAADQVDPGAAAAAAAAAAPPAPPAPAFPPQLPPHVATEIDRR
KKRPLENDGPVKKKVKVQKQEGGSDLGMSGNSEPKKCLRTNRVSKSLEKLKEFCDSALPQSRVQTESLQERFAVLPKCTDFDDI
SLLHAKNAVSSDSKRQINQKDTTLFDLSQFGSSNTSHENLQKTASKSANKRSKSIYTPLELQYIEMKQKHDAVLCVECGYKYRFFG
EDAEIAARELNICHLDHNFMTASIPTHRLFVHVRRLVAKGYKGVVQKTETAALKAIGDNRSSLFSRKLALYTKSTLIGEDVNPLIKLD
DAVNVDEIMTDTSTSYLLCISENKENVRDKKGNIFIGVGVQPATGEVVFDSFQDSASRSELETRMSSLQPVVELLPSALSEQTEALIH
RATSVSVQDDIRIRVERMDNIYFEYSHAFQAVTEFYAKDTVDIKGSQIISGIVNLEKPVICSLAAIKYLFKEFNLEKMLSKPENFKQLSSKM
EFMTINGTTLRNLEILQNQDTMKTGSLWVLDHTKTSFGRRKLKKWVTQPLLKLREINARLDAVSEVLHSESSVFGQIENHLRKLPI
GRGLCSYHKKCSTQEFFLIVKTLYHLKSEFQAIIPAVNSHIQSDLLRTVILEIPELLSPVEHYLKILNEQAAKVGDKTELFDKLSDFPLIKK
RKDEIQGVDEIRMLHLEIRKILKNPSAQYVTVSGQEFMIEKNSAVSCIPTDWVKGSTKAVSRFHSPFIVENYRHLNQLREQLVDCS
AEWDLFEKFSEHYHSLCKAVHHLATVDCIFSLAKVAKGDYCRPTVQEERKIVIKNGRHPVIDVLLGEQDQYVNNITDLSEDSERVM
IITGPNMGGKSSYIKQVALITIMAIQISYVPAEEATIGIVDGIFTRMGAADNIYKGRSTFMEELTDTAEIIRKATSQSLVILDELGRGTSTH
DGAIAIYATLEYFIRDVKSLLTFVTHYPPVCELEKNYSHQVGNVHMGFLVSEDESKLDPGTAEQVPDFVTFLYQITRGIAARSYGLNVA
KLADVPGEILKKAHKSKELEGLINTKRRLKYFAKLWTMHNADQLQKWTEEFNMEETQTSLLH

(-1)ORF (SEQ ID NO: 73)

MSRRKPASGGGLAASSAPARQAVLSRFFQSTGSLKSTSSSTGAADQVDPGAAAAAAAAAAPPAPPAPAFPPQLPPHVATEIDRR
KKRPLENDGPVKKKVKVQKQEGGSDLGMSGNSEPKKCLRTNRVSKSLEKLKEFCDSALPQSRVQTESLQERFAVLPKCTDFDDI
SLLHAKNAVSSDSKRQINQKDTTLFDLSQFGSSNTSHENLQKTASKSANKRSKSIYTPLELQYIEMKQKHDAVLCVECGYKYRFFG
EDAEIAARELNICHLDHNFMTASIPTHRLFVHVRRLVAKGYKGVVQKTETAALKAIGDNRSSLFSRKLALYTKSTLIGEDVNPLIKLD
DAVNVDEIMTDTSTSYLLCISENKENVRDKKRATFLALWECSLPQARCLIVSRTLLLVQS

(+1)/(-2)ORF (SEQ ID NO: 74)

MSRRKPASGGGLAASSAPARQAVLSRFFQSTGSLKSTSSSTGAADQVDPGAAAAAAAAAAPPAPPAPAFPPQLPPHVATEIDRR
KKRPLENDGPVKKKVKVQKQEGGSDLGMSGNSEPKKCLRTNRVSKSLEKLKEFCDSALPQSRVQTESLQERFAVLPKCTDFDDI
SLLHAKNAVSSDSKRQINQKDTTLFDLSQFGSSNTSHENLQKTASKSANKRSKSIYTPLELQYIEMKQKHDAVLCVECGYKYRFFG
EDAEIAARELNICHLDHNFMTASIPTHRLFVHVRRLVAKGYKGVVQKTETAALKAIGDNRSSLFSRKLALYTKSTLIGEDVNPLIKLD
DAVNVDEIMTDTSTSYLLCISENKENVRDKK(K)GQHFYWHCGSAACHRRGCV

ACVR2**(wt) ORF (SEQ ID NO: 107)**

MGAAAKLAFVFLISCSGA ILGRSETQEC LFFNANWEKD RTNQTGVEPC YGDKDKRRHC FATWKNISGS IEIVKQGCWL
DDINCYDRTD CVEKKDSPEV YFCCCEGNMC NEKFSYFPEM EVTQPTSNPV TPKPPYYNIL LYSVLPLMLI AGIVICAFWV

FIG. 2-7

YRHHKMAYPP VLVPTQDPGP PPPSPLLGLK PLQLLEVkar GRFGCVWKAQ LLNEYVAVKI FPIQDKQSWQ NEYEVYSLPG
MKHENILQFI GAEKRGTSVD VDLWLITAFH EKGSLSDFLK ANVVSWNELC HIAETMARGL AYLHEDIPGL KDGHKPAISH
RDIKSKNVLL KNNLTACIAD FGLALKFEAG KSAGDTHGQV GTRRYMAPEV LEGAINFQRD AFLRIDMYAM GLVLWELASR
CTAADGPVDE YMLPFEEIEG QHPSLEDME VVHKKKRPV LRDYWQKHAG MAMLCETIEE CWDHDAEARL SAGCVGERIT
QMQLRLNIIT TEDIVTVVTM VTNVDFPPKE SSL*

A8, Pos. 451: -1 ORF (Mut.rate 16.3%) (SEQ ID NO: 108)

MGAAAKLAFa VFLISCSsGA ILGRSETQEC LFFNANWEKD RTNQTGVEPC YGDKDKRRHC FATWKNISGS IEIVKQGCWL
DDINCYDRTD CvekKTALKY IFVAVRAICV MKSFLIFRRW KSHSLPQIQ LLSHPITTSC SIPWCHLC*

A8 Pos. 1476: -1 (Mut.rate 81.6%) (SEQ ID NO: 109)

MGAAAKLAFa VFLISCSsGA ILGRSETQEC LFFNANWEKD RTNQTGVEPC YGDKDKRRHC FATWKNISGS IEIVKQGCWL
DDINCYDRTD CvekKDSPEV YFCCCEGNMC NEKFSYFPEM EVTQPTSNPV TPKPPYYNII LYSLVPLMLI AGIVICAFVW
YRHHKMAYPP VLVPTQDPGP PPPSPLLGLK PLQLLEVkar GRFGCVWKAQ LLNEYVAVKI FPIQDKQSWQ NEYEVYSLPG
MKHENILQFI GAEKRGTSVD VDLWLITAFH EKGSLSDFLK ANVVSWNELC HIAETMARGL AYLHEDIPGL KDGHKPAISH
RDIKSKNVLL KNNLTACIAD FGLALKFEAG KSAGDTHGQV GTRRYMAPEV LEGAINFQRD AFLRIDMYAM GLVLWELASR
CTAADGPVDE YMLPFEEIEG QHPSLEDME VVHKKRGLF*

FLJ11053, A11 Pos. 1695, Mut.rate 52.2%

wt ORF (SEQ ID NO: 110)

MVLRKLSKkd VTTKLKAMQE FGTMCterDt ETVKGVLpyw PRIFCKISLD HDRRVREATQ QAFEKLTlKV KKQLAPYLKS
LMGYWLMAQC DTYTPAAFAA KDAFEAAFPp SKQPEAIAFC KDEITSVLQD HLIKETPDTL SDPQTVPEEE REAKFYRVVT
CSLLALKRLL CLLPDNEldS LEEKFKSllS QNKFWKYGKH SVPQIRsAYF ELVSALCQRI PQLMKEEASK VSPSVLLSID
DSDPIVCPAL WEAVLYTLTT IEDCWLHVNA KKSVPFKLST VIREGGRGLA TVIYPYLLPF ISKLPHSITN PKLDFFKNFL
TSLVAGLSTE RTKTSSSESS AVISAFYECL RFIMQQNLGE EEIEQMLVND QLIPFIDAVL KDPGLQHGGQL FNHLAETLSS
WEAKADTEKD EKTahNLEnv LIHFwerLSE IcvAKISEPE ADVESVLGVS NLLQVLQKPK SSLKSSKKKN GKVRFADEIL
ESNKENEKCV SSEGEKIEGW ELTTEPSLTH NSSGLSPLR KKPLEDLVCK LADISINYVN ERKSEQHLRF LSTLLDSFSS
SRVFKMLLGD EKQSIvQAKP LEIAKLvQKN PAVQFLYQKL IGWLNEDQRK DFGFLVDILY SALRCCDNDM

-1 ORF (SEQ ID NO: 111)

MVLRKLSKkd VTTKLKAMQE FGTMCterDt ETVKGVLpyw PRIFCKISLD HDRRVREATQ QAFEKLTlKV KKQLAPYLKS
LMGYWLMAQC DTYTPAAFAA KDAFEAAFPp SKQPEAIAFC KDEITSVLQD HLIKETPDTL SDPQTVPEEE REAKFYRVVT
CSLLALKRLL CLLPDNEldS LEEKFKSllS QNKFWKYGKH SVPQIRsAYF ELVSALCQRI PQLMKEEASK VSPSVLLSID
DSDPIVCPAL WEAVLYTLTT IEDCWLHVNA KKSVPFKLST VIREGGRGLA TVIYPYLLPF ISKLPHSITN PKLDFFKNFL
TSLVAGLSTE RTKTSSSESS AVISAFYECL RFIMQQNLGE EEIEQMLVND QLIPFIDAVL KDPGLQHGGQL FNHLAETLSS
WEAKADTEKD EKTahNLEnv LIHFwerLSE IcvAKISEPE ADVESVLGVS NLLQVLQKPK SSLKSSKKKM VRLDLLMRYL
KAIKRMKNVY LQKERRLKAG N*

-2 ORF (SEQ ID NO: 112)

MVLRKLSKkd VTTKLKAMQE FGTMCterDt ETVKGVLpyw PRIFCKISLD HDRRVREATQ QAFEKLTlKV KKQLAPYLKS
LMGYWLMAQC DTYTPAAFAA KDAFEAAFPp SKQPEAIAFC KDEITSVLQD HLIKETPDTL SDPQTVPEEE REAKFYRVVT
CSLLALKRLL CLLPDNEldS LEEKFKSllS QNKFWKYGKH SVPQIRsAYF ELVSALCQRI PQLMKEEASK VSPSVLLSID
DSDPIVCPAL WEAVLYTLTT IEDCWLHVNA KKSVPFKLST VIREGGRGLA TVIYPYLLPF ISKLPHSITN PKLDFFKNFL
TSLVAGLSTE RTKTSSSESS AVISAFYECL RFIMQQNLGE EEIEQMLVND QLIPFIDAVL KDPGLQHGGQL FNHLAETLSS
WEAKADTEKD EKTahNLEnv LIHFwerLSE IcvAKISEPE ADVESVLGVS NLLQVLQKPK SSLKSSKKKW*

+ 1 ORF (SEQ ID NO: 113)

MVLRKLSKkd VTTKLKAMQE FGTMCterDt ETVKGVLpyw PRIFCKISLD HDRRVREATQ QAFEKLTlKV KKQLAPYLKS
LMGYWLMAQC DTYTPAAFAA KDAFEAAFPp SKQPEAIAFC KDEITSVLQD HLIKETPDTL SDPQTVPEEE REAKFYRVVT
CSLLALKRLL CLLPDNEldS LEEKFKSllS QNKFWKYGKH SVPQIRsAYF ELVSALCQRI PQLMKEEASK VSPSVLLSID
DSDPIVCPAL WEAVLYTLTT IEDCWLHVNA KKSVPFKLST VIREGGRGLA TVIYPYLLPF ISKLPHSITN PKLDFFKNFL
TSLVAGLSTE RTKTSSSESS AVISAFYECL RFIMQQNLGE EEIEQMLVND QLIPFIDAVL KDPGLQHGGQL FNHLAETLSS
WEAKADTEKD EKTahNLEnv LIHFwerLSE IcvAKISEPE ADVESVLGVS NLLQVLQKPK SSLKSSKKKW*

KIAA1052, A11 Pos. 689, Mut.rate 42.2%

Wt ORF (SEQ ID NO: 114)

MAGRPLRIGD QLVLEEDYDE TYIPSEQeIL EFAREIGIDP IKEPELMWLA REGIVAPLPg EWKPCQDITG DIYYFNfANG
QSMWDHPCDE HYRSLVIQER AKLSTSGAIK KKKKKKEKkd KKDRDPPKSS LALGSSLAPV HVPLGGLAPL RGLVDTPPSA
LRGSQSVSLG SSVESGRQLG ELMLPSQGLK TSAYTKGLLG SIYEDKTALS LLGLGEETNE EDEEESDNQS VHSSEPLRN
LHLDIGALGG DFEYEEsLRT SQPEEKDdVS LDSDAAGPPT PCKPSSPGAD SSLSSAVGKG RQGSGARPGL PEKEENEKSE
PKICRNlVTP KADPTGSEPA KASEKEAPED TVDAGEEGSR REEAaKEPKK KASALEEGSS DASQeIEISE HMKEPQLSDS
IASDPKSFHG LDFGFRSRIS EHLLDvDVLS PVLGGACRQA QQPLGIEDKD DSQSSQDELQ SKQSKGLEER YHRLSPPLPH
EERAQSPPRS LATEEEPPQG PEGQPEWKEA EELGEDSAAS LSLQLSLQRE QAPSPPAACE KGKEQHSQAE ELGPGQEEAE
DPEEKVAVSP TPPVSPEVRS TEPVAPPEQL SEaALKAMEE AVAQVLEQDQ RHLLESKQEK MQQLREKLCQ EEEEEILRLH
QQKEQSLSSL RERLQKAIEE EEARMREES QRLSWLRAQV QSSTQADEQ IRAEQEASLQ KLREELESQQ KAERASLEQK

FIG. 2-8

NRQMLEQLKE EIEASEKSEQ AALNAAKEKA LQQLREQLEG ERKEAVATLE KEHSAELERL CSSLEAKHRE VVSSLQKKIQ
 EAQQKEEAQL QKCLGQVEHR VHQKSYHVAG YEHELSSLLR EKRQEVEGEH ERRLDKMKEE HQQVMAKARE QYEAERKQR
 AELLGHLTGE LERLQRAHER ELETVRQEQH KRLEDLRRRH REQERKLQDL ELDLETRAKD VKARLALLEV QEETARREKQ
 QLLDVQRQVA LKSEEATATH QQLEEAQKEH THLLQSNQQL REILDELQAR KKLKESQVDL LQAQSQQLQK HFSSLEAEAQ
 KKQHLLREVT VEENNASPHF EPDLHIEDLR KSLGTNQTKE VSSSLSQSKE DLYLDSLSSH NVWHLLSAEG VALRSAKEFL
 VQQTRSMRRR QTALKAAQQH WRHELASAE VAKDPPGIKA LEDMRKNLEK ETRHLDKMS AMRKGNLLK KKEEKLNLQLE
 SSLWEEASDE GTLGGSPKK AVTFDLSDMD SLSSSESSEF SPPHLDSTPS LTRKIHGLS HSLRQISSQL SSVLSILDSL
 NPQSPPLLA SMPAQLPPRD PKSTPTPTY GSLARFSALS SATPTSTQWA WDSGQGPRLP SSVAQTVDDF LLEKWRKYFP
 SGIPLLSNP TPLESRLGYM SASEQLRLQ HSHSQVPEAG STTFQGIIEA NRRWLERVKN DPRLPLFSST PKPKATLSLL
 QGLDEHNRV KYYRF*

- 1 ORF (SEQ ID NO: 115)

MAGRPLRIGD QLVLEEDYDE TYIPSEQEIL EFAREIGIDP IKEPELMWLA REGIVAPLPG EWKPCQDITG DIYYNFNANG
 QSMWDHPCDE HYRSLVIQER AKLSTSGAIK KKKKKRKRKT RRTETPPKVR WPWVPH*

- 2ORF (SEQ ID NO: 116)

MAGRPLRIGD QLVLEEDYDE TYIPSEQEIL EFAREIGIDP IKEPELMWLA REGIVAPLPG EWKPCQDITG DIYYNFNANG
 QSMWDHPCDE HYRSLVIQER AKLSTSGAIK KKKKKGKERQ EGQRPPQKFA GLGFLISPSS CSSWGPFSFT RSCGYPTLCS
SWISKREPG LSGVWTSARW THAAFTGSQD LCLYKGSGLHI*

+ 1 ORF (SEQ ID NO: 117)

MAGRPLRIGD QLVLEEDYDE TYIPSEQEIL EFAREIGIDP IKEPELMWLA REGIVAPLPG EWKPCQDITG DIYYNFNANG
 QSMWDHPCDE HYRSLVIQER AKLSTSGAIK KKKKKGKERQ QEGQRPPQKF AGLGFLISPS SCSSWGPFSF TRSCGYPTLC
SSWISKREPG ELSGVWTSARW RTHAAFTGSQ DLCLYKGSGLG LHI*